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siderable incrustation of iron. Among the mosses, *Fontinalis antipyretica* L. gave a very intense reaction, but only in the walls; the cell-contents never gave evidence of any amount of iron being present. In the procambium of the cotyledons of *Sinapis alba*, the author had a well marked reaction; during the first or second week of germination the iron disappears entirely.

Following this is a very important series of investigations on the "iron-bacteria:" *Crenothrix Kühniana* Rabenh.⁵, *Crenothrix dichotoma* Cohn, and *Leptothrix ochracea* Kütz., previously studied by Cohn⁶, Zopf⁷, and Hugo de Vries⁸ with regard to their iron-hoarding properties, and first noticed in this connection by Winogradsky;⁹ Molisch finds that the iron even after its oxidation in the "Gallerthülle" of these algæ, never enters into their protoplasm. The outer slimy layer has a very singular attraction for the iron contained in the nutritive solution which there becomes oxidized. But the other parts of these plants have no specific oxidizing power.

By means of his reagent mentioned above, the author further showed that the chlorophyll-molecule contains *no* iron. Studies on chlorosis showed that deficiency of iron in the protoplasm of any plant which may be subject to chlorosis causes a general pathologic state of the plant, and that the condition named is only one feature thereof.

Fifty-five species of fungi gave iron-reaction. This, in connection with experiments in nutritive media, led to the result that at least for *Aspergillus niger* iron is indispensable, and that this substance seems to play a very important role in the life of many other fungi.—J. CHRISTIAN BAY.

Latent irritability.

Sachs¹⁰, referring to his very extensive studies of root-geotropism, calls attention to a special side of root-life of tropical and other epiphytes, namely to the fact that certain root-hairs are not geotropic, but follow other laws in growing out

⁵=Cl. polyspora Cohn.

⁶Cohn's Beiträge i. 108.

⁷Entwicklungsgeschichtliche Untersuchung über *Crenothrix polyspora*. Berlin, 1879.

⁸Die Pflanzen und Thiere in den dunklen Räumen der Rotterdamer Wasserleitung. Jena, 1890.

⁹Ueber Eisenbakterien. Botanische Zeitung. 1888, p. 261.

¹⁰Physiologische Notizen. V. Ueber latente Reizbarkeiten. (Flora, LVII (1893). 1-15.

among the earth-particles. Experiments on the growth of the roots of *Solanum tuberosum* showed how the root-system of this plant, when the surroundings are arranged similar to those of an epiphytic vegetation develops in a way like that of a genuine epiphyte. The property of doing so is, as long as the roots live under ordinary circumstances, latent, the adaptation to surroundings giving rise to this new feature of root-life. The facts thus obtained are used by Sachs to explain saltatory biological variations, one of the features of the "struggle for existence." Those who explain each and every property in an organism by the proper selection of species forget that we had the properties, irritabilities, and energies of the organs *before* the selection, or, at least, we ought to search for them. What we understand as the original properties of the organized matter, is not told by anybody, but Sachs is sure, "that certain properties, irritabilities, etc., were originally present, on which the struggle for life, and the natural selection could exert its influence."

It is very interesting to see how Sachs, in the autumn of his life, holds up again experimental physiology before a school of biologists which too often makes deductions concerning general biological laws, adaptations, etc., from facts just as they find them and which does not trace these facts to their origin by means of experiment.—J. CHRISTIAN BAY.

Studies upon the Xyrideæ.

How incomplete our present knowledge is of this family is only too manifest when we examine the literature upon this subject. It seems as if the majority of authors have restricted themselves to mere systematic treatises, as for instance Martius, Kunth, Seubert, Chapman, Grisebach and Ries, while anatomical studies are very few and scattered. The present paper¹ is, therefore, highly welcome, since the author gives us a number of details concerning the morphology and anatomy, besides describing and figuring several new and very interesting species.

The vegetative organs show morphological characters that are not only useful in the discrimination of species, but are also of great interest when considered from a comparative point of view. This is the case for instance with the ramifi-

¹NILSSON, ALBERT: Studien über die Xyrideen. Kgl. Svenska Vet. Akad. Hdlgr. xxiv. no. 14. pp. 75 pl. 6. Stockholm 1892.